



US005353075A

United States Patent [19]

Conner et al.

[11] **Patent Number:** 5,353,075[45] **Date of Patent:** Oct. 4, 1994[54] **CONVERTIBLE FLAT PANEL DISPLAY SYSTEM**[75] **Inventors:** Arlie R. Conner, Tualatin; Jonathon R. Biles, Portland; Paul E. Gulick, Tualatin, all of Oreg.[73] **Assignee:** In Focus Systems, Inc., Tualatin, Oreg.[21] **Appl. No.:** 128,890[22] **Filed:** Sep. 29, 1993**Related U.S. Application Data**

[60] Continuation-in-part of Ser. No. 1,055, Jan. 6, 1993, and Ser. No. 701,411, May 15, 1991, abandoned, which is a division of Ser. No. 233,285, Aug. 17, 1988, Pat. No. 5,101,197.

[51] **Int. Cl.⁵** G03B 21/56[52] **U.S. Cl.** 353/122; 353/DIG. 5; 364/231.1[58] **Field of Search** 353/122, 119, DIG. 3, 353/DIG. 5; 358/254; 364/708.1, 231.1, 231, 231.2, 231.3; 348/836, 838[56] **References Cited****U.S. PATENT DOCUMENTS**

4,917,465	4/1990	Conner et al.	350/335
4,950,072	8/1990	Hondae	353/DIG. 5
5,041,965	8/1991	Chen	364/200
5,050,946	9/1991	Hathaway et al.	385/33
5,052,078	10/1991	Hosoi	358/254
5,091,873	4/1992	Araki	364/708.1
5,101,197	3/1992	Hix et al.	340/784

5,168,294	12/1992	Davis et al.	353/122
5,175,672	12/1992	Conner et al.	364/708.1
5,264,992	11/1993	Hogdahl et al.	364/708.1

OTHER PUBLICATIONS

LaPolla, Stephanie, et al., "Notebooks Linked to Mobile Presentation," PC Week, Sep. 6, 1993, pp. 29 and 33.

Primary Examiner—William A. Cuchlinski Jr.*Attorney, Agent, or Firm*—Stoel Rives Boley Jones & Grey[57] **ABSTRACT**

A flat panel display that is convertible between direct and projection display applications is incorporated in an information processing device of a unitary construction. In preferred embodiment, the information processing device is selectively configurable as a laptop-style personal computer and a projection display panel. The device includes a base section that contains computer circuitry, supports data input keys, and is pivotally coupled to a display panel section having an addressable flat panel display and an opaque backing member in opposed face-to-face relation thereto. The display panel section is selectively positionable between a first position in which the flat panel display is directly observable by a user, a second position in which the backing member covers the flat panel display and the data input keys for storage purposes, and a third position in which the display panel section is generally nonoverlapping and co-planar with the base section.

37 Claims, 6 Drawing Sheets